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Newer media should play a far more significant role than has been allowed in planned change. The present published concensus of the effects of educational media underestimates its potential persuasive effects. Research needed to realize the potentialities of newer media is outlined. Learner characteristics which are relevant and significant for communication purposes should be assessed. The problem of reinforcement of effect should be studied. The degree of attitude change should be researched. After techniques have been developed which modify verbal behavior, large-scale studies should be undertaken to determine the relationship between the verbal behavior and overt behavior.

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INSTRUCTIONAL TECHNOLOGY - U.S.C.

Role of Newer Media in Planned Change

A Paper prepared for the Symposium on Identifying Techniques and Principles for Gaining Acceptance of Research Results of Use of Newer Media in Education.

University of Nebraska
November 24-27, 1963

by Jack V. Edling

TEACHING RESEARCH
Oregon State System of Higher Education
Monmouth, Oregon

ED002719

The fact that I write this paper and read it to you ought to communicate something about newer media. Perhaps it merely suggests that newer media are just a new name for audiovisual aids and the lecturer is still king. Well, it so happens that this just isn't true. The processes of science are now being extended to the crude handicraft known as teaching, and some rather dramatic changes are taking place. I do not believe that my purposes are best achieved through the methods I am employing today. Yet, despite my very strong convictions, I am behaving in a manner contrary to those convictions. Why do I not use the more effective techniques of which I speak? My answer to my question is that so much time and effort is required to do what I know can be done that I am forced by the limitations of time and resources to settle for something I consider less than satisfactory. I should probably also, however, confess that the reason I am willing to "wear my heart on my sleeve" is that the essence of what I want to say in this paper is demonstrated clearly by my own present dilemma. What I hope to convince you of (and all others interested in planned change) is that newer media can play a far more significant role than they have ever been allowed to play in planned change, provided that the time and effort is found to enable them to demonstrate their capabilities. I shall further argue that among alternative means available for gaining acceptance of research results of use of newer media in education, the newer media have no peer.

To enable you to understand why I believe as I do, it will be necessary to describe the way I structure situations in order to think systematically about them.

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The following diagram contains the essential elements of my Weltansicht, or more simply, my particular view of the World.

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Figure 1 here

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The circular figure represents each individual in his central platform viewing the rest of the Universe. The square figures represent other people. The triangles represent all other objects that man can perceive, including both physical, tangible objects and what I shall call psychological objects, which refer to intangibles such as ideas and concepts.

Of course, the world isn't this simple. There are not just random objects and people circulating out there somewhere in everyone's perceptual field. Rather, people and objects are grouped into various kinds of systems which I shall not attempt to describe, but which I am certain we all perceive.

I view education, in part, as a process in which each individual establishes relationships with himself and the other people and objects which surround him. Learning involves a change in behavior resulting from certain kinds of experience. I structure most activity in this simple paradigm to enable me to more objectively analyze and respond to the situations with which I am confronted. Educational objectives, for example, always involve a learner, one or more objects and a relationship between or among the learner and the object or objects. Today I am trying to establish a new relationship between you and a class of objects sometimes called newer media. My intent is to have you view these objects in a different way when you are faced with a situation in which it is necessary for you to get other people to modify their behavior towards certain kinds of objects in our common environment.

The following diagram is intended to point up an essential difference between the real newer media and other objects towards which people must learn new relationships.

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Figure 2 here

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The symbol at A represents a new kind of seed corn, a new weapon, or a new drug. The symbol at B represents media as an object. Now consider the role that new media can play in gaining acceptance of New Media in Education - essentially the title of our symposium. As objects, newer media have a characteristic not possessed by other objects. This characteristic is illustrated by the symbol at C which attempts to indicate that these new media can be developed to reflect to different individuals, represented by the symbols at 1 and 2, the relevancy of the media themselves to the individual learner's particular requirements. Other objects in our environment do not possess the characteristic of being able to modify their image for individual requirements. Obviously, some highly creative people possess this characteristic because it is they who form new media. This difference, however, is an essential one in evaluating new media as change agents. If this unique characteristic (I'd like to call it "omniform" characteristic) is not utilized, of course, there is little difference between communication media and other objects from the viewpoint of developing adequate relationships between people having specific desires or requirements and innovations or new objects. But when this unique characteristic is utilized, then media, qua media, have no peer for purposes of developing the desired relationships. They literally have "triple value" because they can be developed to persuade not only by precept but by example as well, and they can be made relevant to individual requirements.

The objective of getting you to view a more significant role for newer media in planned change is important because people and circumstances are continually creating new objects (as well as billions of new people) and we must learn to live with these new people and objects at an unprecedented rate. Almost every person and object has some significance and some of these people and things have the power to destroy us. If there is any purpose in doing anything, it certainly would appear that we ought to concentrate on trying to survive with some kinds of satisfaction. My point is the old one of "civilization being a race between education and catastrophe." It is imperative that large enough numbers learn to relate to other people and objects at an adequate rate, otherwise survival in the present use of the term

will not be possible.

My final introductory remark relates to something I call the criterion of feasibility. It appears that it is possible to classify at least two different ways for an individual to learn to respond adequately to people and objects. The word adequately in this context refers to my earlier notion of survival with some kinds of satisfaction. One way to learn is through direct, first-hand experience with persons or objects. The second method might be thought of as indirect or vicarious experience. The following diagram may help to clarify the way I perceive the role of newer media in relation to these two methods.

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Figure 3 here

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The symbol at No. 1 represents an individual learning about an object through direct, first-hand means. The symbol at No. 2 represents a teacher who has a direct, first-hand experience with the object, and who in turn provides an indirect, vicarious, or communicated experience for the learner with reference to the object. Of course, there can be any number of "teachers" in this line. The two lines at No. 3 indicate that in this second situation the learner is experiencing a direct, first-hand relationship with the teacher at the same time that he is supposedly experiencing an indirect relationship with the object. The interactions between these two experiences are most interesting from a pedagogical viewpoint. There is the ever present possibility that the direct experience may interact in such a way as to preclude an adequate indirect learning experience. However, that is another subject. The two lines at No. 4 indicate that a teacher can provide the learner an indirect or vicarious experience with the object through media. The learner, of course, also has a direct, first-hand experience with the particular medium employed.

The reason for this rather lenghy explanation of the obvious is to provide me the opportunity to present a viewpoint which is not so obvious. In fact, it is highly controversial. However, applying the criterion of feasibility, I believe that: (1) the rate at which new objects are appearing, (2) the time and expense

involved in providing direct, first-hand experience for the greatly increasing numbers of learners, and (3) the innumerable problems associated with providing competent teachers in the required quantity precludes the learning of adequate relationships toward large enough numbers of objects by large enough numbers of people through means other than technological.

The purpose of this paper is to attempt to: (1) argue that the present published concensus of the effects of educational media underestimate their potential persuasive effects, (2) explain why observations of media effects have been underestimated, (3) expand your perception of the potential role of newer media as change agents, and (4) outline some of the research needed to realize the potentialities of newer media.

Present Concepts of Newer Media Effects.

The reason for reviewing the systematic work that has been reported up to the present time is to explore why most of us do not get too excited about newer media as agents for change. In discussing this topic, there are some very difficult problems of definition. When one wishes to study the effects of media in influencing attitudes or behavior, it is often the case that the topic being reported is not very clearly defined. Hoban and Van Ormer (1951) in reporting on the influence of motion pictures in the area of motivation, attitudes, and opinions stated the following: "Motives, so called, are the starting point of the need - means - goal chain of activity. Motives include any state or event in the individual which initiates and regulates his activity in relation to a goal. Such terms as psychological drive, urge, need, impulse, desire, wish, interest, attitude, purpose and ideal are frequently used to describe types of motives." With this kind of a beginning it is obvious that my entire paper could be spent attempting to arrive at some kind of a theoretical definition that would at least serve the purpose of an effective taxonomy. Further, I am quite certain my attempts would not be very satisfactory. A more useful way to proceed, at least for my present purposes, is to employ operational definitions to the extent that this information is available. In other words, I

shall try to describe the criterion used to evaluate change in each study reported and not try to define it. At the same time, I shall be talking about media changing a certain kind of behavior and that something must be given some kind of a name for purposes of convenience. More recent attempts to label components of learning not entirely in the cognitive or psycho-motor domain have employed such terms as "non-intellective" or "affective." I don't know if these symbols are any more satisfactory. In any event, I shall be using words like attitudes and motives when I am referring to certain behavior which can be defined in terms of the operations people are performing.

It is also very interesting to observe that in assessing media effects, the obvious criticism of using verbal behavior as a criterion, as contrasted with other more global types of behavior, is always made. Those who are relatively inexperienced in the complexities of these investigations, seem to always want to answer all the questions in a single study. They want to know: Do films change "behavior" or don't they? It seems like such a reasonable and obvious question that it should be possible to set up an experiment that would provide a definitive answer. But experience has demonstrated that most behavior, including verbal behavior, is influenced by many things and the task of isolating the effects of the film or the interactions of the film with various other factors is indeed a complex activity. As Newcomb (1937) has so effectively stated,

> "Actions are no more inherently 'valid', in the first place, than words. The following remarks seem to us patently true: Actions are frequently designed to distort or conceal 'true' attitude quite as fully as verbal behavior...All behavior is subject to modification in the process of execution from considerations of courtesy, expediency, or other social pressures. And it is furthermore apparent that when verbal behavior is used to distort or conceal the 'true' attitudes, the distortion commonly conforms to everyday behavior. The reasons for concealing 'true' attitudes are the same for both verbal and 'overt' behavior. If conditions of secrecy, and preferably of anonymity, are observed, there is more r[illegible]son

to expect free and complete expression of attitudes through words, thus freed from social pressures than from behaviors which are open to all beholders. There are other methods, both psychological and sociological, for measuring what people do; here we are discussing attitudes, and observable behavior presents a weaker case for validity than 'merely verbal' behavior, under proper safeguards. And, finally, it may be observed that a man's categorical agreement or disagreement with a rather strongly stated opinion about the Chinese or Jews, or Rotarians, or Communists, is in everyday life regarded (if the man is sincere) as a <u>significant</u> part of his behavior. There seems to be no reason why this behavior should suddenly become <u>nonsignificant</u> when it is made the subject of careful inquiry, particularly if motives for insincerity are reduced to a minimum."

Almost all of the early studies resemble the approach of an eager graduate student with a sincere determination to answer the basic questions once and for all. In one of the very early studies, 1922, Lasley and Watson reported on the effects of the film <u>Fit to Win</u> on sexual behavior. Hoban and Van Ormer report: "While they found that the film immediately influenced members of the audience to 'resolutions of continence,' there was no actual effect of the film on sexual behavior as measured by (1) venereal disease frequency and prophylaxis frequency and (2) information collected from interviews with doctors, clergymen and social workers who were in close contact with the test populations. There was some indication, however, that the film did influence behavior of venereal disease - infected audience members in the direction of seeking prompt treatment." My somewhat distorted imagination pictures the problems of the investigators as they sought to determine whether the film <u>Fit to Win</u> modified the sexual behavior of the viewers. I can imagine the members of the experimental population faced with a decision in which the temptation of the situation were in conflict with the message of the film. I can also imagine the person's behavior when confronted with the questions of the sincere investigator, such as "did you?" or "didn't you?" "Well, was the film effective or wasn't it?"

Did it or did it not influence behavior?

Freeman and Hoefer (1931) investigated the effect of classroom films dealing with care of the teeth on (1) daily brushing of the teeth (2) diet and (3) dental care. In reporting the findings, Hoban and Van Ormer state: "The results were inconclusive, for which several reasons might be advanced: the small margin for improvement in diet and use of the toothbrush; the unreliability of the index records of these activities; and, failure of the experiment to take adequate account of social-economic status." There are numerous other studies in which actual overt behavior of some very complex form was used as the criterion. Measures such as the rate of advancement in school, juvenile delinquency, manners, social behavior, daydreaming, life patterns, reputation and conduct, and even submitting to tuberculin skin tests were used to try to determine the effects of films. These were all very complex behaviors and the investigators learned the hard way. In the process, however, they taught those who were to come later that they should proceed in other ways.

It was really not until 1929 when Peterson and Thurstone began applying the newly developing techniques of attitude measurement that more precisely defined data were collected and a more carefully controlled methodology began to evolve. Peterson and Thurstone had students from Hyde Park, Illinois High School complete a "schedule" which was intended to measure their attitudes toward race and nationality. The students were then shown four films and a second schedule was administered about a month later for the purpose of determining the effects of the films on the social attitudes of the students as measured by Thurstone's "schedules". Since those early studies (there were several known as the Payne-Fund studies) this general type of experiment has been repeated many times with gradually increasing sophistication. The general findings from the early studies, and these are still widely quoted today, was that there was usually a modification of the expressed attitude of the group as a whole in the intended direction, but the change did not occur with every individual and the degree of expressed change did not persist. I think these are

the pervasive opinions among those who have made an inquiry. Among those who dug deeper the issue was not quite a closed one because expressed attitudes were found to vary considerably with age, sophistication, existing attitudes of the audience, the subject matter of the communication, and the manner in which the communication was organized and presented. I think one of the most important things to note in these early studies is the before-after testing pattern. The influence of the pre-test was not questioned and neither was the influence of further testing in determining persistence of effects. What appears to be a necessary and minor technicality may prove to be one of the major reasons why we depreciate the role of media as a change agent.

During World War II extensive investigation was made by the Army and Navy of the motivational effects of orientation films. The significant war time studies by Hovland, Lumsdaine, and Sheffield were a significant advance in the methodology of most previous studies. While their findings were comparable to Peterson's and Thurstone's, their increasing experience led them to a discussion of some possible explanations why their findings were as they were, and some good hypotheses for others to test. Two very important methodological questions were raised in these World War II studies. One deals with the question of message relevancy and criteria, and the other with effects of research design. I shall discuss these one at a time.

First,/ there is the large problem dealing with the learner's needs and attitudes, and the relevancy of the message to those needs and the way they are assessed. One of the objectives of the research was to determine the influence of the Army's orientation film The Battle of Britain in terms of verbal statements of soldiers relating to their willingness to serve as a soldier. Another purpose was to determine whether the film increased resentment against the enemy. Quoting from the report in Experiments on Mass Communication: "Did the film bring about an increased willingness to serve? This was considered to be one of the principal objectives in showing the orientation films. However, no reliable changes were found in this area as a result of seeing the film." The criteria used to determine whether the men were more

willing to serve were two questions. The first, "If you had your choice when you finish your training, which would you choose?" And the two choices were: "Duty in an outfit overseas" or "Duty in an outfit in the United States" and "Why?" It was found that in the control group, thirty-eight percent of the men checked the key answer, which was supposed to be "Duty in an outfit overseas." In the film group forty-one percent checked the item. The second question used to evaluate the effects of the film was: "In your honest opinion, do you feel that you can do more to help win the war here in the Army, or do you feel you were doing more to help win in the job you had before you came into the Army?" There were three alternatives, plus "don't know." The percentage of the men checking the "key" answer: i.e., "can do more in the Army" was 48%; the control group, 44%. The differences between film and control group on both criterion items were such that the experimenters reported that "no reliable change was produced by the film." Note that in both instances, less than half of the men in both the control group and the film group indicated a preference for overseas duty after training or were convinced that their contribution was greater as a soldier than as a civilian. Thus slight, but statistically unreliable, differences were consistently found in favor of the film groups.

A second purpose of the research, as I mentioned above, was to determine the motivational influence of the film in terms of verbal statements relating to resentment against the enemy. The attainment of this objective was evaluated by two statements. The first: "The Nazis probably do not treat the people they conquer as badly as American newspaper and radio stories say." The percentage of the men who disagreed with this statement, who saw the film, was 70%. Those who did not see the film, 66%. A second statement said: "We should see to it that the Germans and Japs suffer plenty for all the trouble they are causing us." The difference between the film and control group was less than 1%, being reported as 78% in both instances. To quote from the report: "Supposedly one of the important motivations making men willing to serve in the Army was resentment against the enemy. At the time of the study, mass bombings of cities had not yet become a regular part of allied methods, and it was thought that resentment against the Nazi's might be in-

creased by such scenes as those of the indiscriminant bombings of civilians and the mass burials after the destruction at Coventry. However, no evidence was obtained for a reliable increase, either in belief in Nazi brutality or an expression of agression against the Germans." I think you will discover that from this film and from these two questions and two statements there is a widely quoted conclusion that there is little evidence to indicate that films do much to change motivations or attitudes in an effective way. Unfortunately, many people have not carefully studied the report and the limitations in the study which are so carefully expressed by the authors. In the first place, the film content consisted mainly of excerpts from films already produced and available to the producer. The Battle of Britain film used in the study was aimed primarily at the objective of developing " a feeling of confidence, insofar as possible under the circumstances, in the integrity and the fighting ability of our allies. It dealt with the dramatic British resistance to the German air attacks on England during the fall of 1940 and covered the period starting with the fall of Dunkirk in June, 1940, to the last major bombing raid of the Luftwaffe which set fire to large areas of London in December. The story told by the film may be briefly outlined as follows: Hitler had a plan for World conquest which had moved forward without a hitch to the conquest of France and the evacuation of the British at Dunkirk. If Hitler could have conquered England and taken over the British Isles and the British fleet, America would have been placed in a very dangerous position. Hitler did attempt to conquer England, which failed because he could not get control of the air over Britain. This failure which gave America precious time in which to prepare for war, was due to the almost superhuman efforts of the British people and of the RAF and to the unwillingness of the British to give up, even in the face of apparently hopeless odds." Is it really reasonable for young men to conclude from that content that they should want to serve in an outfit overseas and at the same time conclude that they could do more to help win the war in the Army than by what they were doing to help win the war before they came into the Army. From what I know about a lot of those guys, they were right when they checked that they were helping more to help win the war by staying out of the Army.

The point here is simply that when men who have been removed from civilian life and from most of the things they value are suddenly put in an Army situation which, for many was negative to say the least, one can hardly expect a film of the type described to suddenly and dramatically change their entire orientation. Obviously, they perceived the common enemy at least as partially responsible for their present predicament and they could not be expected to have anything but negative attitudes and feelings toward him. To me, however, it is not surprising that resentment against the enemy was not increased appreciably by the showing of a film of the type described.

A second major contribution of the Hovland, Lumsdaine and Sheffield studies was in the area of research design. To my knowledge this was the beginning of the employment of the "after only" design of experiment in comparison with the "before-after" design in the assessment of media effects in the affective domain. This involved the administration of the attitudinal items only after the film showing, but still employed a control group which did not see the film. Measurements were thus made on both film and control groups but measurements were not made for the same group of men both before and after the film showing. To quote from the report:

> "Each of these two designs has its advantages and disadvantages. In general, the before-after design is superior from the standpoint of problems of analysis and sampling, whereas the after-only design is better from the standpoint of being easier to administer and less subject to the possibility that the measuring process will bias the measurements obtained."

In making a comparison of the effects of measurement in the two designs, however, it was reported that, "No opportunity was afforded in the studies of the orientation films to carry out methodological studies designed to determine the relative effects of the measuring process on the results obtained in the after-only and the before-after design. The "applied" nature of the studies forced the policy of using all feasible precautions without determining the extent of the need for the precautions. Thus, the potential distortions listed are merely theoretical possibilities."

In referring to the applied nature of the studies, the experimenters were referring to certain conditions that were imposed upon them by the nature of the experimental populations. For example, in their report they state:

> "It would have been desirable from the standpoint of sampling to have the experimental and the control groups composed of men selected at random from the total available group. But such a procedure could easily have biased the results because it would have been contrary to all precedent in the training centers. Assembling a random audience from many different outfits to see a movie would have been a most mysterious event and would have led to numerous speculations as to why it was done. Moreover, this procedure would require the same mysterious assemblage in taking the survey."

The authors report, however, that a little evidence on the effects of the research design was obtained incidentally. "The evidence comes from the study of The Battle of Britain which was carried out at one camp with the after-only design and at another camp with the before-after design. The samples were comparable to the extent that the men at each camp were new inductees in the first few weeks of basic training. They were not comparable in that the two studies were carried out at different times (about two months apart), the men were receiving different kinds of training (Armored Force versus Infantry); and the populations of the two camps differed somewhat in composition on various demographic factors." Nevertheless, they reported that one "result that bears on the relative effects of the two different measuring processes is the relative size of the effects obtained at two different camps. The general trend was in the direction to be expected from the "consistency" hypothesis - that is, the results at the camp in which the before-after design was used tended to be less than at the camp using the after-only." However, they were wary of the sampling procedures and simply stated that:

> "If the samples at the two different camps could be regarded as equivalent samples from the same population, the above results would show significantly less effect of the film when the before-after procedure is used. The difference in the effects obtained is in the direction expected from the

hypothesis that in the before-after procedure, the men are stimulated to be consistent in their answers to the questions the second time, either because the men remenber their former answer and seek to be consistent or because, having once been forced to give an answer, their opinion tends to be crystallized and repeated."

They conclude with the following:

"no definitive conclusion can be drawn from the evidence available at this time. The data suggest that the before-after procedure does minimize the actual effects, but alternative interpretations of the results are not ruled out."

The post World War II studies have asked continually more refined questions. The Nebraska Program of Educational Enrichment Through the Use of Motion Pictures reported by Meierhenry; The Yale Studies in Attitude and Communication reported by Hovland and others; and perhaps most importantly, The Instructional Film Research Program at Pennsylvania State University reported by Carpenter and Greenhill have both expanded knowledge and contributed to some new generalizations. One of these studies by Mertons had the objective of learning whether or not a series of mental hygiene films could be used to effect changes in self-regarding attitudes and consequently effect improvements in an individual's personal adjustment. Five different films were used consecutively in the experiment. In the conclusions, the statement is made that "although the observed differences between the two groups on the personality scales could have been due solely to chance, the basic consistency of the results suggests real, if very small, differences in favor of the experimental groups and in support of the hypothesis that selected mental hygiene films can affect a change in self-regarding attitudes." In the implications it is stated, "Evidence from this experiment favors the proposition that series of mutually reinforcing films, rather than single films, are required to restructure or modify self-regarding attitudes." This was reported in 1951. In 1954, Allport, in his book The Nature of Prejudice quotes Klapper (1950) and says:

"Research, though still somewhat meagre, suggests even now certain tentative

> laws. (1) While single programs - a film perhaps - show slight effects, several related programs produce effects apparently even greater than could be accounted for in terms of simple summation. This principle of pyramiding stimulation is well understood by practical propagandists. Any publicity expert knows that a single program is not enough; there must be a campaign."

I have looked diligently for other experimental evidence on pyramiding effects with no success. Allport is exceedingly correct. The evidence is meager. In fact, in the more than ten years that I have been studying media, I have come to the conclusion that many of our generalizations on media effects are based on rather limited evidence.

Further Evidence on Media Effects.

It will now be necessary for me to present some evidence which I have collected in my own research. Let me hasten to explain that I do not propose that my work is in any way more definitive than any previous work. But, it is based upon the work of many others. In fact, without the pioneering efforts and the previous work of more than thirty years by people more qualified than myself, not only would I have not had any idea about what questions to ask, but practically no notion of how to proceed to gain further evidence. Further, my studies have been limited to secondary school students in an experiment involving approximately 775 junior high school students in one school in Lincoln, Nebraska, and a secondary study involving slightly over 5,000 senior high school students in eight high schools in the Willamette Valley in Oregon. In my studies I have tried to gain additional information on the effects of research design, such as pretesting and the large differences in effects on individuals reported in so many studies. This latter is often called "within-group" variance and may be a key factor masking the actual effects of media. Therefore, I shall now briefly outline the purposes, the research design employed, and the findings of a study which has just been completed.

(The following section was actually reported by film.)

As an experimental vehicle to serve as the means to determine effectiveness of mass media messages a decision was made to attempt to modify the attitudes of high school students toward obtaining education beyond the high school. While evidence varies, depending upon criteria employed in specific studies, there is general agreement that less than half of the "bright" high school students ever enter college. One recent study reported "that each year roughly 50,000 students with sufficient ability to graduate from college do not even finish their high school education." The President's Committee on Education Beyond the High School has documented the occupational outlook which emphasizes the need for individuals with post high school education to satisfy the rapidly increasing demand in professional and technical occupations. With the declining demand for farm and unskilled workers and the need for sound education to provide a basis for almost constant adjustment to change, there is ample evidence both that the "facts" support the need for a favorable attitude toward post high school education, at least for "bright" students, and that many of these students hold negative attitudes toward continuing their education.

Existing psychological instruments were used to measure valued goals and interests (preferred activities) of students in the public secondary schools of Oregon. The term "motivational pattern" was given to the combined goal and interest pattern preferred by an individual according to the selected instruments. Through the technique of inverted factor analysis, students who shared similar motivational patterns were identified.

Figure 4 summarizes the three general factors considered in identifying students with characteristics which theoretically would homogeneously group the students for purposes of the experimental communication. The circle represents a random sample of secondary school students. The horizontal line through the circle represents the division between students with high and low scholastic aptitude. The vertical line represents the division between those students who plan and do not plan education beyond high school. The resulting division of students produced four principal groups.

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The principal group of concern for experimental purposes was composed of students of "high" aptitude who were either not planning to complete high school or were not planning additional education after completing high school. This group is illustrated by the broken line in the upper right quadrant. The overlapping circles represent sub-groups of individuals who make similar responses on existing psychological instruments. When a message has been prepared which is logically "congruent" with the motivational pattern of one of the sub-groups, that sub-group is categorized as a "congruent group."

The primary objective of the experiment can now be stated in more specific terms. It was to determine whether or not a communication relating an attitudinal object (obtaining post high school education) to an identifiable motivational pattern (in the manner described earlier) produces a significantly greater change in attitude toward the object for those individuals whose motivational pattern is congruous with that expressed in the communication than on other individuals who do not possess a motivational pattern congruous with that expressed in the communication.

For statistical purposes the primary objective was stated in the null form, i.e., no differences between groups were postulated. If the null hypothesis were rejected and it was found that individuals who possess motivational patterns congruous with those in the communication are those who accept the message to a significantly greater degree than others who experience the communication, it could be assumed that the form of the message produced the differential effects if it is also shown that the design of the experiment rules out the alternate hypotheses that differential effects were produced by (1) the nature of the motivational pattern, or (2) the effect of some stimuli other than the message.

In order to rule out the possible hypothesis that differential effects between the two main groups, if present, were produced because of the nature of the motivational pattern, the basic experiment involved two experimental communications, each employing a different motivational pattern. The effects of each message on those individuals identified as congruent with the laternate message were also determined.

In order to rule out the possible hypothesis that the effect of some stimuli

other than the message produced the differential effects, control groups were employed which did not experience the experimental communication.

The experimental design employed was an extension of that proposed by Solomon. The extension was necessary in order to permit the testing of hypotheses relative to differing motivational patterns. Those individuals whose motivational patterns were intended to be harmonious with the communication are referred to as GROUPS WITH CONGRUENT MOTIVATIONAL PATTERN. All other individuals are grouped and referred to as GROUPS WITH INCONGRUENT MOTIVATIONAL PATTERNS. Each of the two basic groups, in turn was divided into four sub-groups by means of a stratified random selected procedure, thus creating four comparable congruent groups and four comparable incongruent groups. The addition of "after-only" sub-groups in the design not only permitted the testing of hypotheses relative to motivational patterns and the influence of uncontrolled stimuli, but in addition allowed for the testing of hypotheses relating to interaction effects between the pretest and the communication (Table 1). Since no single hypothesis could be tested relative to all effects of an experimental communication, such as the one employed, several specific hypotheses were tested relative to (a) the effectiveness of the communication on groups of similar and dissimilar motivational patterns, and (b) the interaction effects between the pretest and the communication.

Table 1

Research Design Employed to Analyze Effects of a Communication in Terms of Motivational Pattern

Groups With Congruent Motivational Patterns				Groups With Incongruent Motivational Patterns			
Before-After Sub-Groups		After-Only Sub-Groups		Before-After Sub-Groups		After-Only Sub-Groups	
Message Group (Group A)	No Message Group (Group B)	Message Group (Group C)	No Message Group (Group D)	Message Group (Group E)	No Message Group (Group F)	Message Group (Group G)	No Message Group (Group H)
Pretest	Pretest	Rest	Rest	Pretest	Pretest	Rest	Rest
Communi-cation	Rest	Communi-cation	Rest	Communi-cation	Rest	Communi-cation	Rest
Post-test	Post-test	Post-test	Post-test	Post-test	Post-test	Post-test	Post-test

Specific Hypotheses Tested

To determine whether the experimental communication produced an effect on any one group, a test of significance was conducted between the mean post-test score of the group which received the communication and the mean of the corresponding control group which did not receive the communication. It was reasoned that if the evidence were to indicate that the difference in the mean post-test scores was significantly less for the corresponding control group, it could be inferred that the difference was a function of the message. This approach entailed four specific comparisons as follows (from Table 1):

a. Groups A and B

b. Groups C and D

c. Groups E and F

d. Groups G and H

To test the possible effects of uncontrolled stimuli operating in the uniform manner on all groups of like motivation patterns, the technique suggested by Solomon was employed. His technique permitted the inference of means and experiences of pre-test scores for the after-only sub-groups thus allowing for an analysis of data in terms of differences between pre and post-test scores. It was reasoned that a significant change in mean score from the pretest to the post-test for any group not receiving the communication would indicate that the change in score was the function of uncontrolled stimuli. This approach also permitted comparison of differences and gains between the "message" group and the corresponding control group.

To determine whether the communication produced a differential effect on groups of unlike motivational patterns, a test of significance was conducted between the mean post-test score of individuals in Group A who could be matched with individuals in Group E on the basis of pre-test scores. It was reasoned that if the evidence were to indicate that the mean post test scores of the selective individuals in Group A were significantly greater than the corresponding mean post test scores of the selected individuals in Group E, it could be inferred that the effectiveness of the

message was a function of the motivational pattern of the group.

To determine whether the pretest interacted with the communication, and thereby influenced the post test score, a test was conducted to determine the significance of the difference between the mean post test score of Group A and that of Group C. This comparison permitted an inference about interaction effects when the communication was congruent with the motivational pattern of the audience. To determine whether interaction effects were also operative when the message was incongruent with the motivational patterns of the audience, similar tests of significance were conducted comparing the post test scores of Groups E and G. It was reasoned that if the evidence were to indicate that the mean test score of the "after-only" group was significantly greater than the mean post test score of the "before-after" group, it could be inferred that the pretest in interacting with the communication masked its effectiveness.

(End of section reported by film)

Findings of The Research

The effects of the experimental films were assessed by two equivalent forms of a "likert-type" attitude inventory which had been subjected to several studies and refined through imperical procedures. Extensive evidence on the reliability and validity of the tests are given in the final report of the research (Edling 1963). One bit of evidence which is of considerable significance relates to the effects of pretesting. It can be seen in Figure 5 that the effects of the pretest are very significant.

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think it is important to point out the difference in the effects of pretesting in the affective domain as compared with pretesting in the cognitive domain. When testing for factual knowledge, experience has indicated that post test scores are almost always enhanced as the result of pretesting. It can be observed that pretesting in the affective domain depresses post test scores and significantly influences test behavior.

A second kind of evidence from the research relates to the differential effects of the films on learners possessing different kinds of characteristics. A part of Figure 6 repeats the information presented in Figure 5 in terms of difference scores. That is, the first bar on the left indicates the difference between the experimental and the control groups for all individuals who received a pretest combining the mean negative gain scores for the control groups and the positive gain scores for the film groups. There is a net difference of 3.35 points.

Figure 6 here

One can see from the second bar on the left that the differences between the experimental and control groups for those who were post-tested only was 5.92 points, not quite doubling the over-all effects of the films as assessed by the attitude scales. The next bar indicates the mean differences between the congruent and incongruent groups which were pre-tested. It can be seen here that the effects of the films on those for whom they were intended are very significantly higher than on individuals who did not possess characteristics congruent with the content of the film yet who were matched on the basis of pretest scores. The final bar on the right indicates the mean difference in scores between the congruent and incongruent groups whose scores were not depressed by the effects of the pre-test. Here we see mean gains averaging almost 30 points per person. It is important to note that the increased effects are on a much smaller number (only those possessing certain characteristics including negative attitudes toward the object) and, therefore, if comparable gains were to be extended for all individuals, it is hypothesized that several messages

would be required to reach the varying characteristics of the individuals in the total audience.

In the complete report of the research there are many other significant facts to note. For example, certainly not all of the gains are accounted for in the groups identified as congruent. As a matter of fact, there were individuals who gained as many as 45 points between pre and post-tests who saw no film at all, and there were individuals who lost that many points who saw no film. In fact individual scores alone mean little in an experiment of this type and clearly document the need for control groups. Additional important data is related to the effects of the films when reversed. Perhaps the most important single finding was the fact that logical congruency from the experimenter's viewpoint is not nearly as important as is congruency or the relevancy of the message to the motivational pattern of the learner <u>as perceived by the learner</u>. This means that the procedures of empirical testing for congruency are as important in the affective domain as are the empirical testing procedures of instructional programing in the development of valid cognitive materials. Further, the research design analyzed for differences not only between groups but between sexes and test forms and interaction among all these factors. Many of the findings are significant in designing further research. However, these refinements in research procedure and the complexities of the detailed analyses should not mask the main finding that in this experiment, as in most others, the within-group variance had the potentiality of masking the actual effect of the films on selected individuals where change was really desired. In this instance, those individuals who held negative attitudes toward education beyond the high school but whose motivational patterns were congruent with the content of the message did not become more negative after experiencing the message, but rather moved very significantly in a more favorable direction. It should further be noted that these differences were not the result of a series of films but were the result of a single, relatively short film of approximately 20 minutes. The films were without any known assistance from teachers or other planned sources. There, undoubtedly, was some discussion and possible reinforcement among those who experienced the film.

In addition to the experimental evidence which I have cited, there is much anecdotal evidence that when a message is tailored and specifically constructed to be congruent with known characteristics of the audience, it can have a very marked effect. One study by Cartwright done on War Bond sales is a specific case in point. "The major reason for selling low denomination Series E Bonds to individuals during the war years was to mop up purchasing power as an inflation control mechanism. In spite of the fact that this was the major reason for actively selling bonds, only about a quarter of the people in the United States recognized this fact. The bulk of the people in the United States look at government fiscal matters in much the same way that they look at their own personal financial affairs. From this standpoint it was perfectly clear to them that the reason the United States government was interested in selling bonds was to obtain money for the purchase of tanks, planes, and guns. About half of the people in the United States, when specifically told in an interview that the primary purpose of selling War Bonds was for inflation control purposes, said they did not believe it. If the treasury would have emphasized inflation control to this segment of the population and had given no other reason for the purchase of bonds, it would have undoubtedly encountered resistance which likely would have had a serious adverse effect upon the purchase of bonds. When the treasury discovered that about three-quarters of the population did not understand how the selling of bonds to individuals could help hold prices down, they recognized that inflation control, as such, could not be used directly as a major appeal to persuade these people to buy bonds. This idea was not psychologically near. The research findings showed, however, that the more different reasons that people saw for buying bonds, the more bonds they were likely to buy. The treasury then used both of these items of information. They developed appeals known to be psychologically relevant, such as "Buy Bonds to Help Keep America Strong," and then built their presentation of specific reasons into this idea known to be central to the "life space" of a great majority of the people. Thus a series of appeals were developed, some urging people to keep America strong by taking the pressure off of the prices of commodities that were scarce by not trying to buy them now. Some

appeals were made to save now so that you would have funds available for post-war buying, thus assure a strong America with good business and full employment in the post-war period.

The effect of Orson Wells' "War of the Worlds" broadcast is well known, in which there was a fictional invasion of men from Mars. Cantril, who studied the effects of the broadcast, described what happened: "Long before the broadcast had ended, people all over the United States were praying, crying, fleeing frantically to escape death from the Martians. Some ran to rescue loved ones. Others telephoned farewells or warnings, hurried to inform neighbors, sought information from newspapers or radio stations, summoned ambulances and police cars. At least six million people heard the broadcast. At least a million of them were frightened or disturbed.

There are many instances of television appeals to mail postcards or money to various individuals or groups, and the effects have literally been overwhelming. Now this kind of evidence is admittedly not definitive. But I think it is sufficient to challenge some cherished notions about the relative ineffectiveness of communication media to effect attitudes and modify behavior. Time does not permit a detailed presentation of some of the techniques and considerations of preparing media to be more effective than they are usually conceived to be at the present time. Without going into detail, let me simply say that from the insights gained from the work of many people, I believe that it is possible to systematically develop the newer media in such a way that they will arouse intense interest in a target audience. I think that messages can be prepared in such a way that existing attitudes can be dislodged or at least partially shaken to the point where an individual will question his present behavior. I further believe that when these conditions prevail it is possible to significantly modify behavior in a desired direction through newer media under certain conditions. The conditions refer to (1) not having the individual commit himself to a given contrary position and at the same time be placed in a position where he must publicly defend this behavior before an attempt is made to communicate with him, and (2) that the content of the

communication is reinforced by subsequent environmental events. This means, essentially, that whatever is communicated by media must, in fact, be "true" in actuality because if it is not, the effects of the communication will be very quickly dissipated. For example, if a message were to modify attitudes significantly toward a certain kind of automobile, a certain kind of seed, and then the person were to test the automobile or the seed and if, in fact, they were good, the newly developed attitude would be reinforced. However, in the event that the car would not work well or the seed would not grow, obviously the attitudes structured by the communication would not long endure. However, it seems to me that the reinforcement of affect is a somewhat different issue than utilizing media as a change agent.

Needed Research.

What I have suggested is that the newer media have been seriously underestimated as an agent for change. I have attempted to state some of the reasons why I believe as I do, and I have attempted to provide some evidence, very limited to be sure, which supports the position that media can be much more effective than they have been in the past. I should like to conclude with the notion that while I believe that the role of newer media in change is much larger than anything yet assigned them, the full potentiality of media for the purposes being discussed today will not be attained unless there is very extensive additional research. I should like to give just four brief examples. First, we really know very little about assessing the characteristics of learners which are relevant and significant for communication purposes. Many individuals, unquestionably, have some hypotheses and some evidence and technique to assess what is psychologically significant. However, there are no studies with which I am familiar that describe the goals and aspirations of large numbers of people in a systematic way. McClelland's work is very significant in this regard, but his work has not been done for newer media communication purposes. Further, the assessment of means to attain goals as perceived by different kinds of learners is practically unexplored. In other language, we know little about symbols which will serve as effective reinforcement for behavior of individuals with different kinds of background experience and aptitude. It appears

to me that this whole problem of assessing what I have called the motivational patterns of individuals for communication purposes is essential before significant advances will be made in designing really effective messages for the newer media.

Second, the problem of reinforcement of affect to which I have previously alluded, is an issue requiring much further study. The literature is filled with talk of boomerang effects, sleeper effects, as well as the regression and diminishing effects of communication. I don't think anyone would presume to know the long-term effects of communication and the long-term effects of reinforcement by communication. I do happen to believe that attitudes are not necessarily built up such as a stalagmite over eons of time with an accumulation of experiences. I believe attitudes can be structured quickly in a single experience, and that present notions of pyramiding effects are merely the result of different messages being effective with different people. It is true that the way data has been treated has made it appear that several messages are more effective with <u>all</u> people rather than the several messages each being effective with specific individuals. However, this is an area for extensive additional research.

Third, most of the research evidence to date deals with the directions of change of attitude and only to a limited extent with the degree of change. Even when the degree of change is reported, the relative intensity required for action is relatively unexplored. Just because an individual is somewhat more inclined toward educational media after a film experience, for example, there is little reason to interpret this evidence as being intense enough to modify other overt behavior.

Finally, as sophistication increases with the newer media, eventually it will be necessary to move toward the kind of studies which were attempted in the beginning. That is to say, after we have learned to crawl, walk, and run, then it will be necessary to determine if we can fly. Eventually, research will have to be done with what I shall call ultimate criterion studies. This means, in essence, that after the techniques have been developed which modify verbal behavior in consistent and predictable ways, very large-scale and sophisticated studies will have to be undertaken to determine the relationship between the verbal behavior and the hoped

for other overt behavior which is the ultimate goal of planned change. It seems to me that it is heartening that there appear to be no serious methodological problems to attaining this ultimate goal. I think it is somewhat analogous to the objective of placing a man on the moon. It probably can be done, but will require a very large effort. One purpose of this latter research is to determine whether or not the size of the effort, required to make media as effective as they potentially can be, is more or less expensive than some other technique for change. This probably cannot be determined until this advanced type of research is conducted. As I expressed in the introduction of this paper, I believe strongly that newer media are the only feasible alternative to the size of the task facing our society and that every effort should be made to advance knowledge in this area as rapidly as possible.

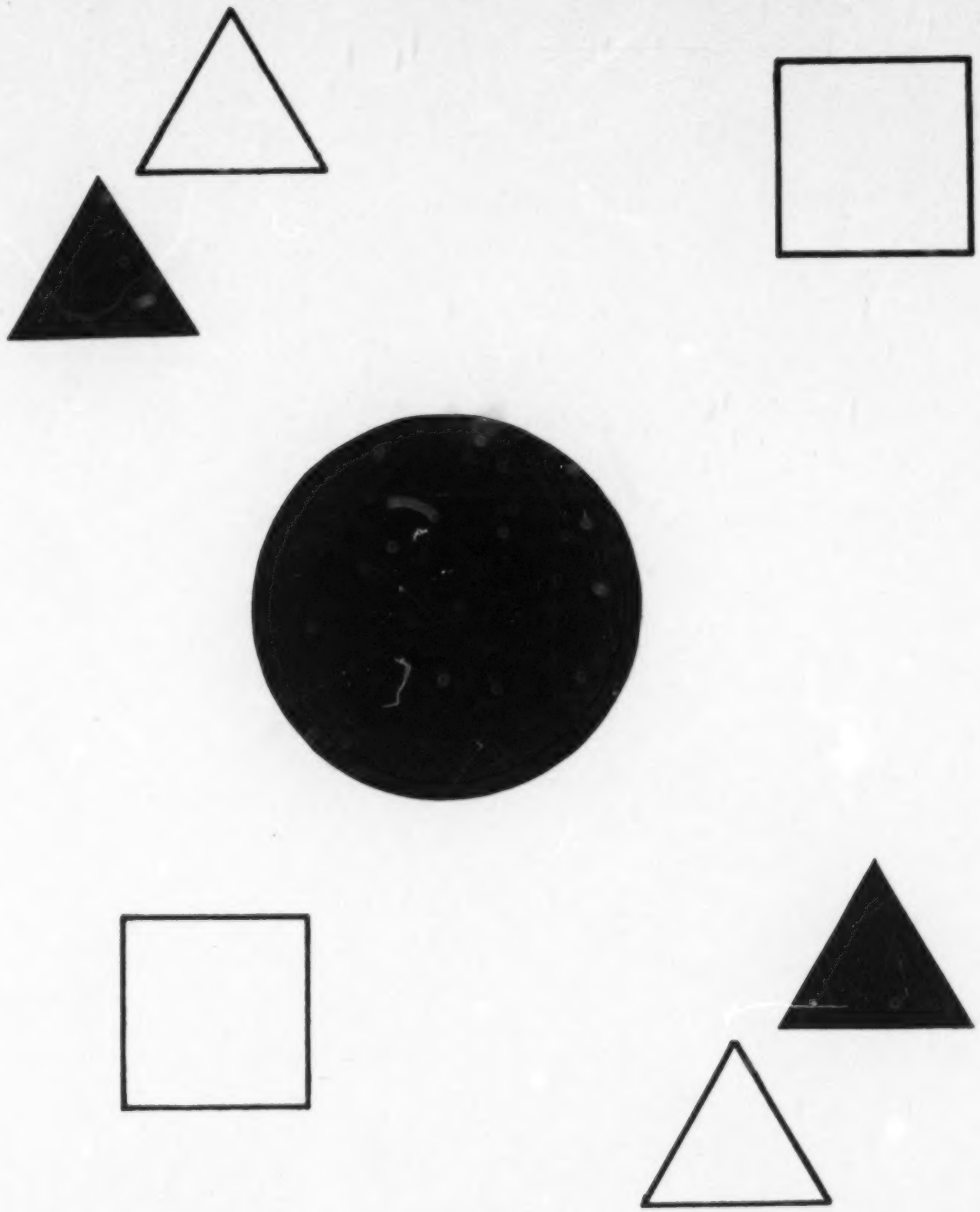


FIG 1

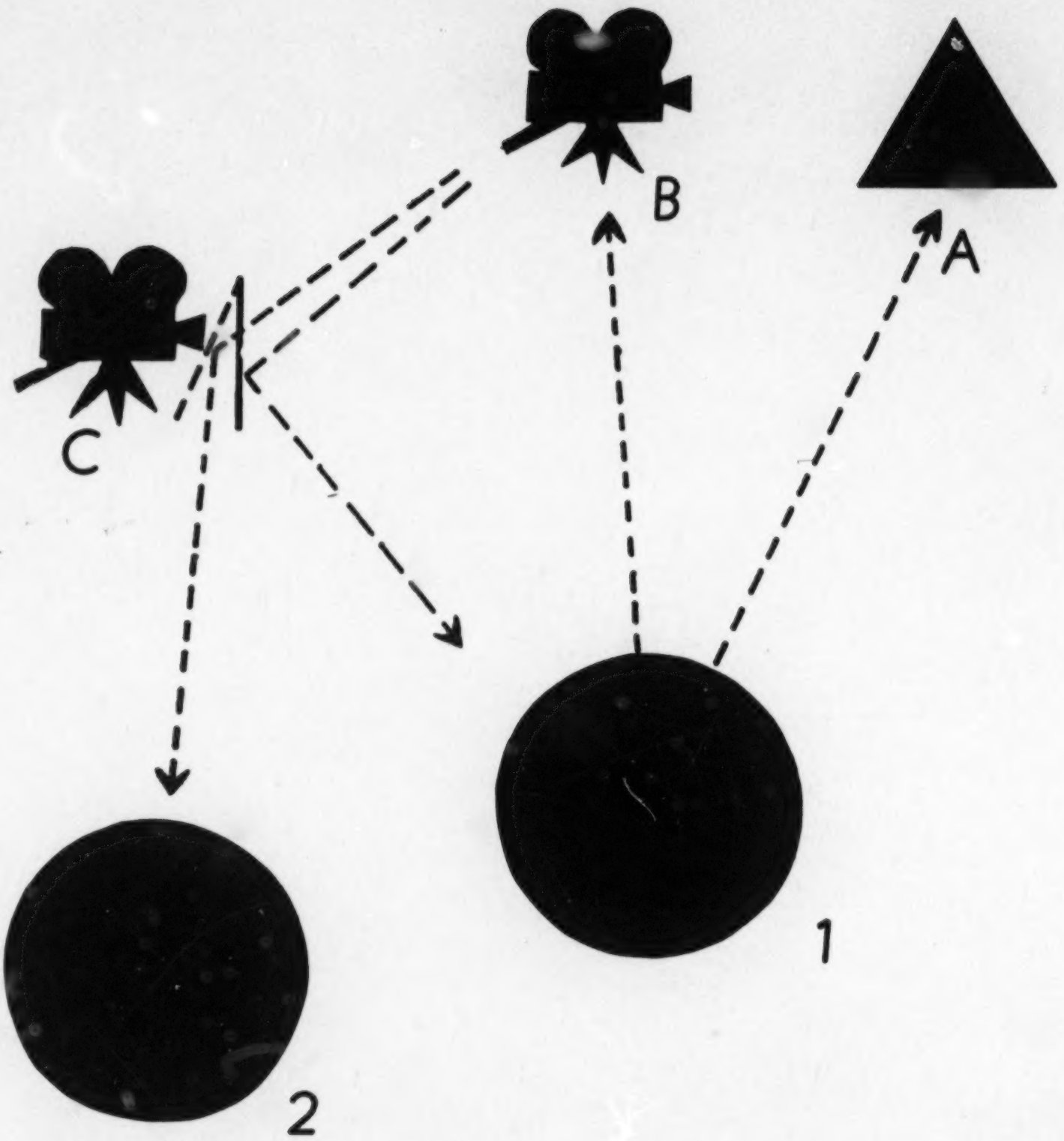


FIG 2

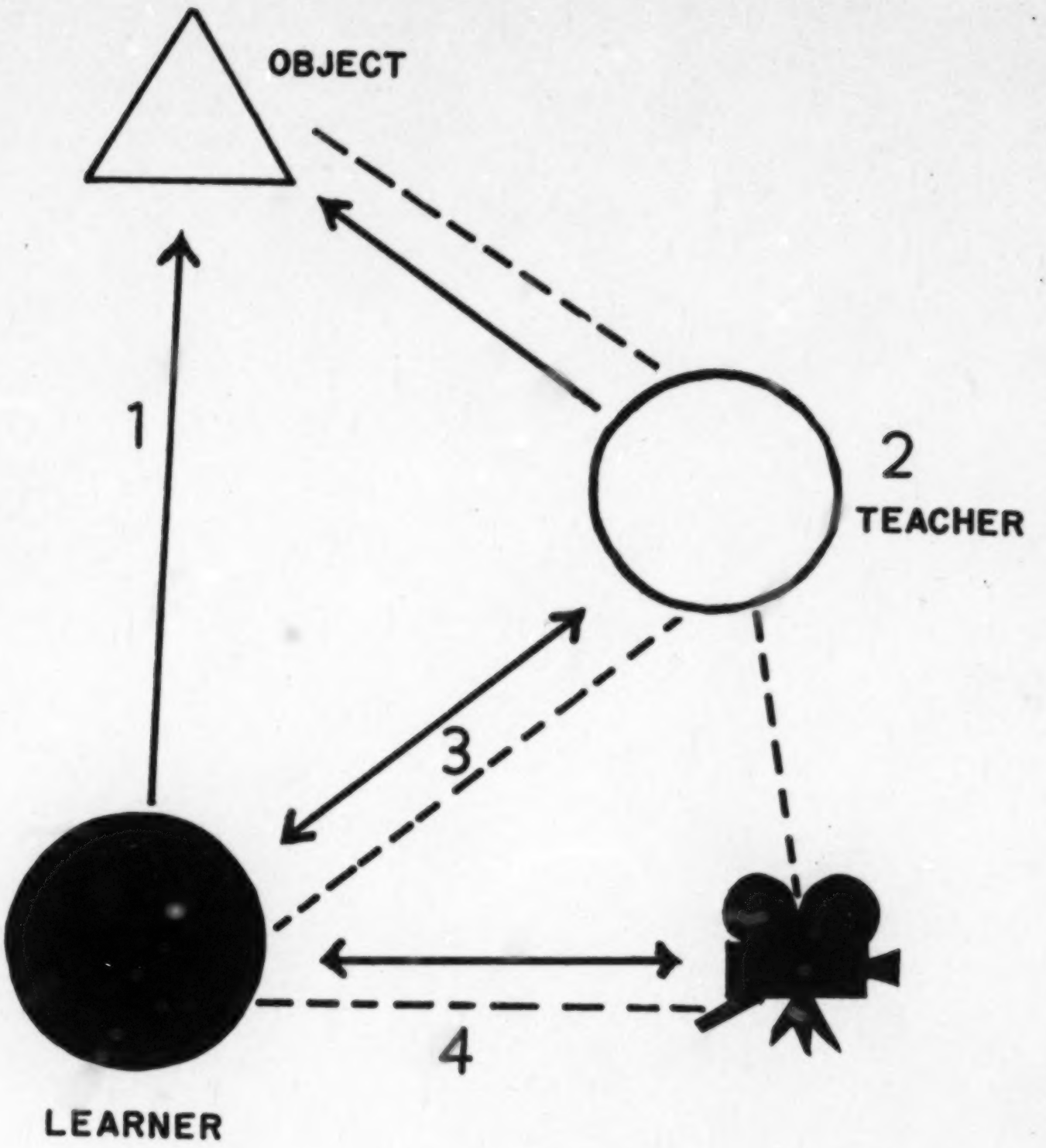


FIG 3

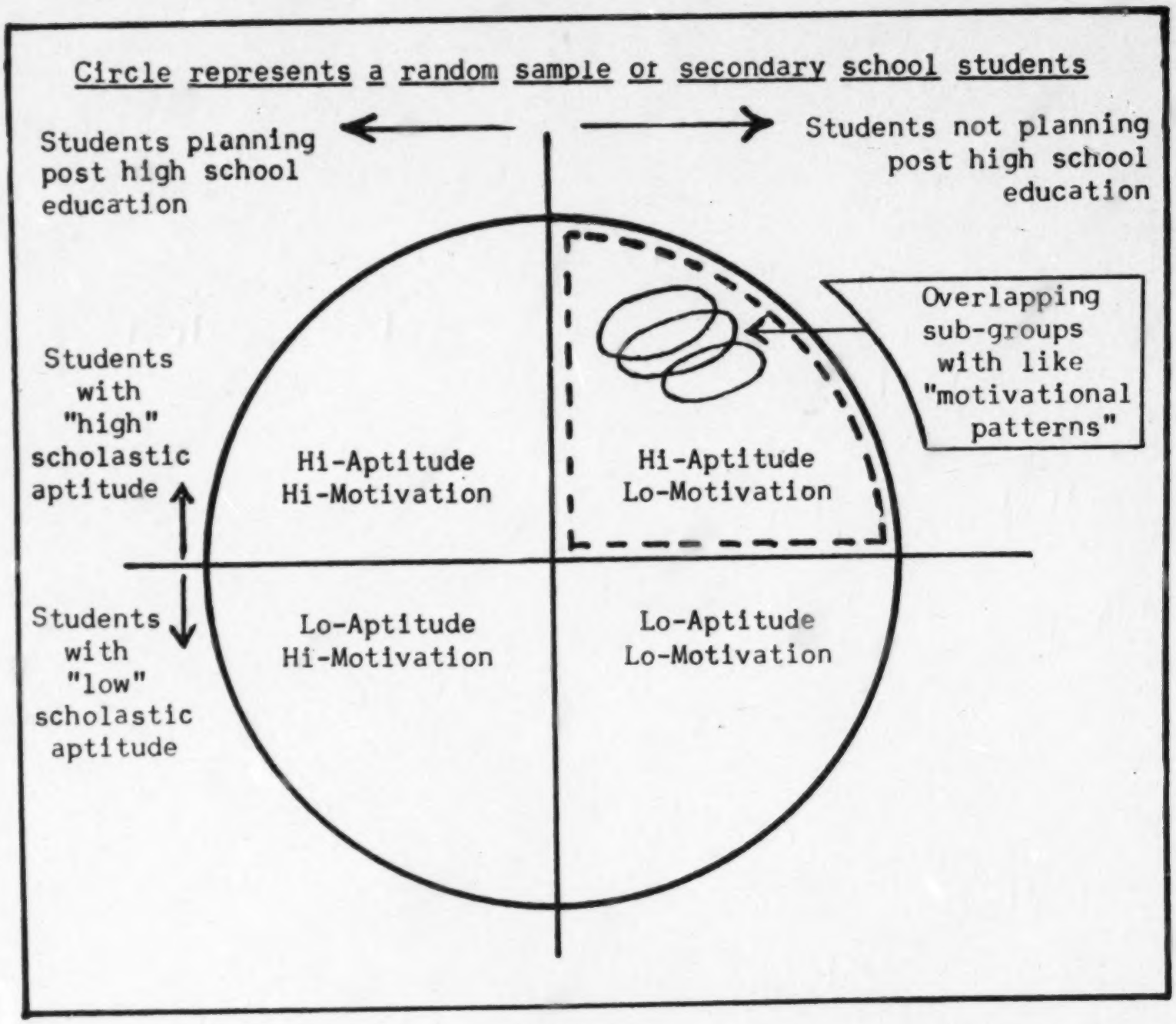
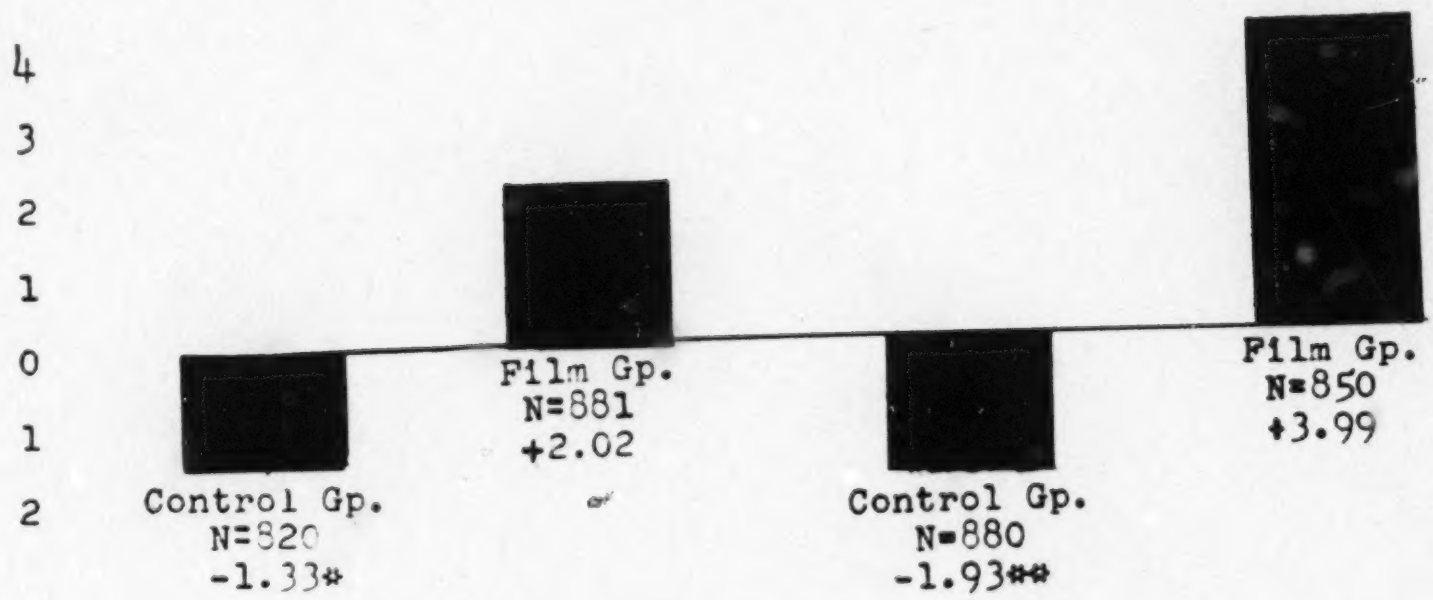

Circle represents a random sample or secondary school students
Students planning post high school education
Students not planning post high school education
Overlapping sub-groups with like "motivational patterns"
Students with "high" scholastic aptitude
Students with "low" scholastic aptitude
Hi-Aptitude Hi-Motivation
Hi-Aptitude Lo-Motivation
Lo-Aptitude Hi-Motivation
Lo-Aptitude Lo-Motivation

Figure 4.

MEAN GAINS ALL SCORES

'Before-After' Design

"After-only" Design (inferred pre-test scores)



*Actual post-test mean score 141.90

**Actual post-test mean score 141.30

FIGURE 5

MEAN DIFFERENCE SCORES BY GROUPS

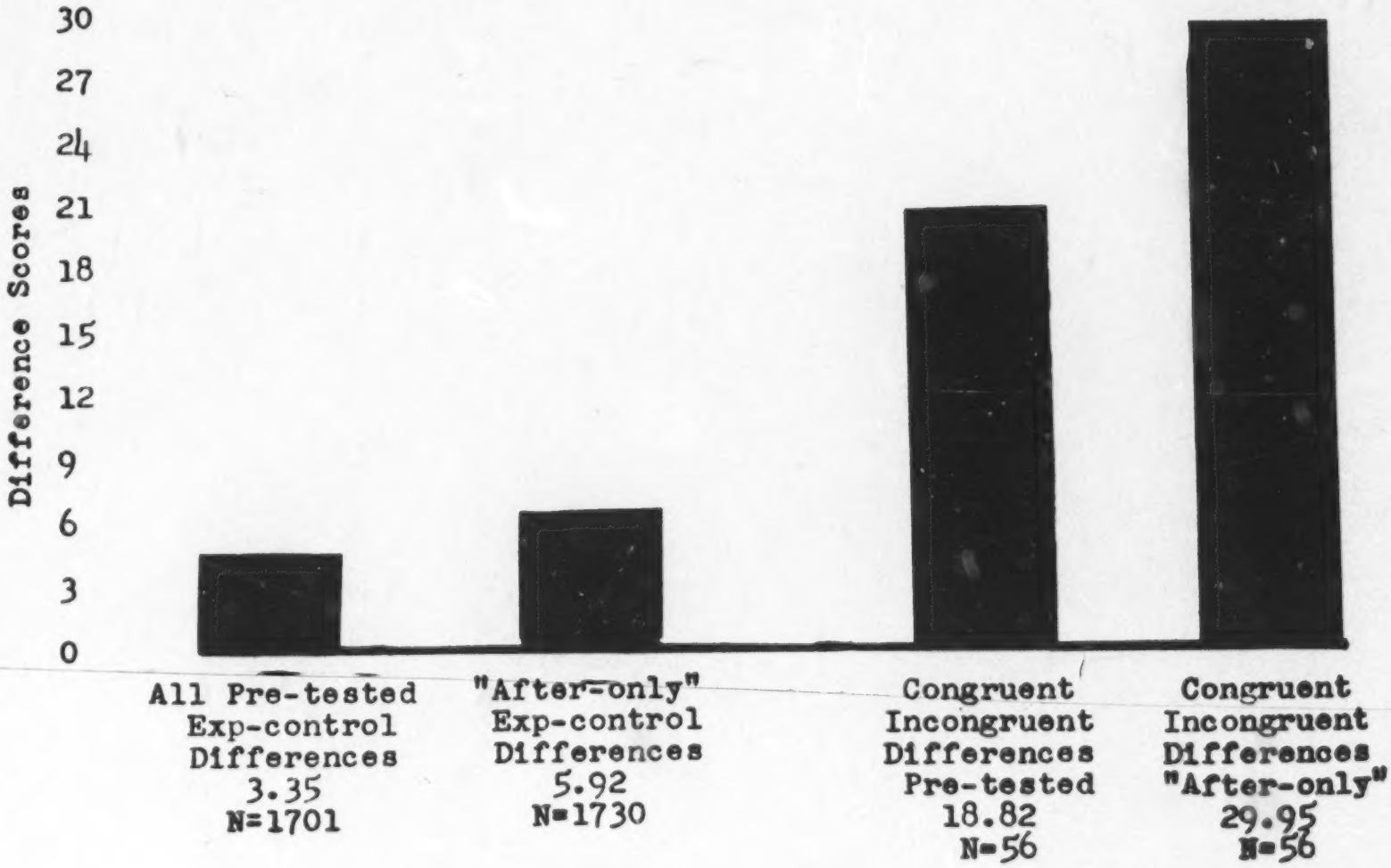


FIGURE 6